Participant Sharing in Chinese Resultatives
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Introduction: Chinese resultatives take the form of verbal compounds $V_1 \cdot V_2$, $V_1$ denoting an activity $e_1$ and $V_2$ its resultant state $s_2$. See (1). Following the literature, we call them R(esultative) V(erb) C(ompound)s and use S ubject$+$O bject$+$O bject to represent sentences containing RVCs.

This talk discusses relations between O and $V_1$, $V_2$. We propose O is thematically related to both $V_1$ and $V_2$: it receives a theta role from $V_2$ by being its argument, and it receives a theta role from $V_1$, not by being its argument, but to satisfy a requirement of RVC formation, which we call Participant Sharing. We motivate Participant Sharing (cf. Rothstein 2004) by showing previous analyses (Li 1990, Lin 2004, Williams to appear) are inadequate in capturing the relation of O to $V_1$ and we implement the idea by adding into the semantic rule of resultative formation a conjunct $[O] \in \theta(e_1)$, which requires the argument of $V_2$ also receive a thematic role from $V_1$.

Problem with Argument Sharing: Since there are two verbs but only two argument positions S and O, assuming both verbs have their own theta roles to assign, it is natural to ask: where does the additional theta go if $V_1$ is transitive? It is easy to show an Argument Sharing idea (Li 1990) cannot be right. Look at (2): (2) is an example of unergative verbs being $V_1$; in this case, the O is not an argument of $V_1$ and Argument Sharing cannot be satisfied. Even worse, there are transitive $V_1$ but without Argument Sharing; following Lin (2004), I call these cases unselective transitive $V_1$, see (3). A comparison between (1) and (3) shows we would never know when Argument Sharing is to be applied.

Problem with Pragmatic Association: Based on examples like (2) and (3), Williams (to appear) proposes Pragmatic Association. In his theory, a thematic relation between $V_2$ and O is always present, but there is no thematic relation between $V_1$ and O. Any understood relation of O to $V_1$ is pragmatically inferred. Take (3) as an example. In Williams’ analysis, it means ‘Zhangsan hacked something, and the axe got blunt as a result’ and pragmatics tells us that the axe is the instrument of hacking.

However, this analysis over-generates. Consider (1) again: Lin (2004) noticed pragmatic association predicts it can either have (4a) or (4b) as its interpretations. But (4b) is impossible, as is shown by the contradiction in (5). In other words, the leaves in (1) has to be interpreted as the patient of hacking. Notice, this problem cannot be solved by Kratzer’s (2005) (citing Bittner 1999) Direct Causation either, since Chinese has RVCs not involving Causation, e.g. xie-cuo ‘write-wrong’, shui-xing ‘sleep-awake’.

Participant Sharing: In view of the above problems, we propose Participant Sharing. It says (6) and treads a middle ground between the two earlier proposals: it enforces a grammatical relation between $V_1$ and O (unlike the Pragmatic Association approach), but it denies an Verb-Argument relation between $V_1$ and O (contra Argument Sharing) and by doing this it leaves open what the precise relation will be.

(6), together with the anti-passive assumption (see (7)) in resultative literature (Lin 2004, Kratzer 2005, Williams to appear), captures (1), (2) and (3). Notice (7) is at least motivated by (2) and (3).

First, (7) solves the problem faced by Argument Sharing by directly denying the principle. But crucially, the effect of Argument Sharing is preserved. Specifically, in (1)-type cases, although leaves is interpreted as the patient of hack, it is not an argument of it; the patient relation between leaves and hack is instead enforced by Participant Sharing (6). Likewise, in (2), Participant Sharing is satisfied by letting handkerchief receive an locative role from cry; in (3) it is also met by allowing axe to receive an instrument role from hack. Second, (6) solves the over-generation problem faced by Pragmatic Association, by excluding any sentence/interpretation whose O does not receive a theta role from $V_1$ of the RVC. Specifically, in (4b), the tree received the patient role from the hack, putting leaves in a situation where it can receive no imaginable thematic role, violating the Participant Sharing constraint.

Implementation: We formalize the above idea using an RVC-formation rule ((8)). Three things need mentioning. First, existentially binding of the internal argument of $V_1$ represents the idea that O is never an argument of $V_1$. Second, Participant Sharing is modeled by $[O] \in \theta(e_1)$, where $[\theta] = \lambda e \lambda x (x$ bears a theta role to e). Third, R represents the relation between $e_1$ and $s_2$; I leave it open whether R is a Causal (Kratzer 2005) or Temporal (Rothstein 2004). (9)-(11) show results of applying (8) to (1)-(3).
(1) **Zhangsan kan-diao le shuye.**

[Zhangsan hack-fall PERF leaves]

‘Zhangsan hacked the leaves and the leaves fell off.’

(2) **Zhangsan ku-shi le shoupa**

[Zhangsan cry-wet PERF handkerchief]

‘Zhangsan was crying and his handkerchief got wet as a result.’

(3) **Zhangsan kan-dun le fuji**

[Zhangsan hack-blunt PERF axe]

‘Zhangsan hacked something and the axe got blunt.’

(4) **Zhangsan kan-diao le shuye**

[Zhangsan hack-fall PERF leaves]

a. ‘Zhangsan hacked the leaves, and the leaves fell.’

b. Impossible: ‘Zhangsan hacked the tree and the leaves fell.’

(5) **# Zhangsan kan-diao le shuye, dan ta mei kan shuye**

[Zhangsan hack-fall PERF leaves, but he not hack leaves]

a. ‘Z# Z hacked the leaves and the leaves fell off, but Z did not hack the leaves’.

b. Impossible: ‘Z hacked something and the leaves fell off, but Z did not hack the leaves.’

(6) **PARTICIPANT SHARING: To combine two verbs V₁, V₂ into an RVC V₁-V₂, the event introduced by V₁ and the event introduced by V₂ have to share at least one participant.**

where: an individual is a participant of an event if the NP denoting the individual receives a theta role from the verb that describes the event.

(7) **ANTIPASSIVE ASSUMPTION: O is never an argument of V₁.**

(8) **RVC FORMATION**

a. **Transitive V₁:** \[\lambda x \lambda y \lambda e₁[P(x)(y)(e₁)] + \lambda x \lambda s₂[Q(x)(s₂)]\]

b. **Intransitive V₁:** \[\lambda x \lambda e₁[P(x)(e₁)] + \lambda x \lambda s₂[Q(x)(s₂)]\]

(9) \[(1) = \exists e₁ \exists s₂[R(e₁)(s₂) \land hack(Zhangsan)(z)(e₁) \land fallen(the leaves)(s₂) \land the leaves \in \theta(e₁)]\]

Pragmatics tells us the leaves can only be interpreted as the patient of hack; [(1)] simplified to:

\[\exists e₁ \exists s₂[R(e₁)(s₂) \land hack(Zs)(z)(e₁) \land fallen(the leaves)(s₂) \land the leaves = PATIENT(e₁)]\]

Since z is the internal argument of V₁, z = Patient \( (e₁) \); the above formula becomes:

\[\exists e₁ \exists s₂[R(e₁)(s₂) \land hack(Zs)(the leaves)(e₁) \land fallen(the leaves)(s₂)]\]

Thus, we get the right interpretation for (1).

(10) \[(2) = \exists e₁ \exists s₂[R(e₁)(s₂) \land cry(Zs)(e₁) \land wet(the h-chief)(s₂) \land the h-chief \in \theta(e₁)]\]

Pragmatics tells us that the handkerchief can be interpreted as the location of cry, and the formula can be simplified to:

\[\exists e₁ \exists s₂[R(e₁)(s₂) \land cry(Zs)(e₁) \land wet(the h-chief)(s₂) \land the h-chief = LOCATION(e₁)]\]

(11) \[(3) = \exists e₁ \exists s₂[R(e₁)(s₂) \land hack(Zhangsan)(z)(e₁) \land blunt the axe)(s₂) \land the axe \in \theta(e₁)]\]

Pragmatics tells us that the axe can be interpreted as the instrument of hack (in the context of being blunt), and the formula can be simplified to:

\[\exists e₁ \exists s₂[R(e₁)(s₂) \land hack(Zs)(z)(e₁) \land blunt the axe)(s₂) \land the axe = INSTRUMENT(e₁)]\]